HYUNDAI HUD21NK

MODEL

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SERVICE MANUAL

CAUTION

Before serving the chassis, read the "X-Ray Radiation Precaution", "Safety Precaution" and "Product Safety Notice" on page 2 of this manual.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-Ray Radiation. To avoid such hazards, the high voltage must not be above the specified limit. The normal value of the high voltage of this receiver is 24KV at zero beam current (minimum brightness) under 220V AC power source. The high voltage must not, under any circumstances, exceed 29KV.
2. Each time a receiver requires servicing, the high voltage should be checked following the High Voltage Check procedure in this manual. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
3. The primary source of X-Ray Radiation in this TV Receiver is the picture tube. For continued X-Ray Radiation protection, the replacement tube must be exactly the same type tube as specified in the part list.
4. Some parts in this receiver have special safety – related characteristics for X-Ray Radiation protection. For continued safety, parts replacement should be undertaken only after referring to the Product Safety Notice.

SAFETY PRECAUTION

Warning: Service should not be attempted by anyone unfamiliar with necessary precaution on this receiver. The following are the necessary precautions observed before servicing this chassis.

1. Since the power supply circuit of this receiver is directly connected to the AC power line, an isolation transformer should be used during any dynamic service to avoid possible shock hazard.
2. Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragment will be violently expelled. Use shatter proof goggles and keep picture tube away from the unprotected body while handling.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as: non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
4. When replacing parts or circuit boards, disconnect the power cord.
5. When replacing a high wattage resistor (Metal oxide film resistor) on circuit board, keep the resistor 10mm (1/2in.) away from circuit board.
6. Connection wires must be kept away from components with high voltage or high temperature.
7. If any fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis part list.
8. The receiver is designed to operate with 220V(50/60Hz) AC mains.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-Ray Radiation protection afforded by them cannot necessarily be obtained by using replacement components rated for high wattage, etc. Replaced parts which have these special safety characteristics are identified in this manual and its supplements, electrical components having such features are shaded on the schematic diagram and the part list.

Before replacing any of these components, read the part list in this manual carefully. The use of substitute replacement parts, which do not have the same safety characteristics, as specified in the part list may create shock, fire, and X-Ray Radiation or other hazards.

CHASSIS ADJUSTMENT

1. B+ voltage adjustment

1-1 Connect 220V AC 50Hz to CN601 and switch on power switch SW601;

1-2 Test the voltage with digital voltage meter between two terminals of C625;

1-3 Adjust VR601 to obtain +110V+/-0.5V reading on the digital voltage meter.

2. NTSC system absorbing adjustment

2-1 Set sweep generator marker to 31.5MHz, 33.5MHz, 34.42MHz, 37MHz, 38MHz and 40.5MHz;

2-2 Apply 80dBuV sweep signal to tuner IF terminal;

2-3 Display demodulation probe connects to pre-I.F AMP input terminal, via. Q101 'b' pole;

2-4 Set Q103 'c' pole and 'e' pole short circuit, adjust L104, and make the attenuation most at 33.5MHz.

3. Memorizer partial initializing

3-1 Go to the function set menu (there are two ways;)

a. Press CH+(PROG+) key and CH-(PROG-) key on the control board at the same time and switch on power switch, then go to the function set menu.

b. After TV is on, press "factory" key twin， then go to the function set menu.

3-2 Press 'PM' key and 'SM' key on the control board at the same time until the picture changes slightly (jumpiness or twinkling at one blow), this means the memorizer having been partial initialized. . Operate repeatedly if the picture has no change.

4. search and storage

COMPLETE MACHINE GENERAL ADJUSTMENT

1. Screen Voltage Adjustment.

1-1 Press 'screen' key;

1-2 Adjust the screen knob of FBT to get a horizontal faintness beam line;

1-3 Press 'screen' key again or 'stand by' key to go to the normal work status;

2. Focus Voltage Adjustment.

2-1 Receive monoscope pattern. Set picture mode standard status;

2-2 Adjust the focus knob of FBT to get the clearest picture.

3. horizontal center adjustment

3-1 Receive monoscope pattern;

3-2 Press 'factory' key one time and go to system parameter adjustment menu;

3-3 Press 'MENU' key, go to horizontal and vertical parameter adjustment menu;

3-4 Select 'H POSITION" by pressing 'PROG+' key and 'PROG-' key. Press 'VOL+' key and 'VOL-' key to obtain the horizontal center of the pattern at the center of CRT screen.

3-5 Exit system parameter adjustment menu by pressing 'factory' key twin.

4. PAL system vertical pincushion adjustment

4-1 Receive PAL system cross hatch pattern signal;

4-2 Press 'factory' key one time, go to system parameter adjustment menu;

4-3 Press 'MENU' key, go to horizontal and vertical parameter adjustment menu;

4-4 Select 'V LINE' and 'V SCURVE' by pressing 'PROG+' key and 'PROG-' key; press 'VOL+' key and 'VOL-' key

and adjust corresponding parameter to obtain picture's vertical pin cushion a good status.

5. PAL system vertical size and vertical center adjustment

5-1 Continue operation 3. Select 'V HEIGHT" and 'V POSITION', press 'VOL+' key and 'VOL-' key adjust corresponding parameter to obtain picture's vertical size and vertical center adjustment a good status.

5-2 Exit system parameter adjustment menu by pressing 'factory' key twin.

6. White Balance adjustment

6-1 Receive white balance test signal;

6-2 Set picture "MILD" mode.

6-3 Insert the special plug into CN002, press adjustment key which belongs to white balance adjustment equipment and go to auto white balance adjustment;

6-4 After adjustment well, remove the pug.

7. Sub-bright adjustment

7-1 Receive PHILIPS signal;

7-2 Set picture "Mild" mode.

7-3 Press 'factory' key one time and go to system parameter adjustment menu;

7-4 Press digital key '0', select 'SUB-BRIGHT';

7-5 Press 'VOL+' key and 'VOL-' key until Grey scale signal can be secerned;

7-6 Exit system parameter adjustment menu by pressing 'factory' key twin.

8. RF AGC adjustment

8-1 Receive 60dBuV monoscope pattern;

8-2 Press 'factory' key one time and go to system parameter adjustment menu;

8-3 Press 'PROG+' key and 'PROG-' key , select ' RF AGC ';

8-4 Press 'VOL+' key and 'VOL-' key to change the value of 'RF AGC' until picture's noise disturbing disappears just;

8-5 Exit system parameter adjustment menu by pressing 'factory' key twin.

9. NTSC system horizontal and vertical adjustment

Receive NTSC system cross hatch pattern. Adjustment's way is same as PAL system's.

10. warm up mode

10-1 Switch on power switch and Press 'factory' key one time; switch off power switch and switch on power switch again, at this time there is no signal white raster and won't switch off automatically. TV receiver can be sent to warm up line.

10-2 Before exit warm up line, press 'factory' key three times continue, at this time exit warm up mode , there is no signal and will appear LOGO pattern.

NOTES:

1. Connect the remote IC PIN7 and PIN16 through a jiggle switch on the custom remote handset , this switch is defined as "screen" key; Connect the remote IC PIN8 and PIN16 through a jiggle switch on the custom remote handset , this switch is defined as "factory" key,
2. On the product line's alignment service we must use special memorizer that has been well written data.
3. If having no special memorizer that has been well written data when servicing out of factory, we can use totally blank memorizer. Memorizer will be automatically totally initialized after main power switch is on. Most parameters are free-alignment after initialized; only need adjust the several parameters of function set parameter and system paramerter adjustment menu.
4. If no blank memorizer or no special memorizer that has been well written data, we can use memorizer that has been written data instead, but must be totally initialized; the operation is as following:
    1. After TV is on, press "factory" key twin， then go to the function set menu;
    2. Press 'AV/TV' key and 'MENU' key on the control board at the same time until the picture changes slightly (jumpiness or twinkling at one blow); this means the memorizer having been totally initialized. Operate repeatedly if the picture has no change;
    3. Switch off and exit;
    4. After initialized, adjust the several parameters of function set parameter and system paramerter adjustment menu.
5. the parameters of function set parameter and system paramerter adjustment menu mustn't be adjusted;
    1. system paramerter adjustment menu
        AFT
        VIF VCO
        H VCO
        VIFDET NEG
        VIFDET INT
        VIFDET EXT
    2. the ninth digital and the tenth digital of function set parameter
        These parameters must be IC interior values. If the above parameters have been changed, we must partially initialize the memorizer.
6. two different initializing
    1. fully initialize: initialize the memorizer's most work data and preset default value. Including: work parameter of NN5199, horizontal and vertical parameter, OPTION parameter (via. function set parameter), picture mode parameter, volume mode parameter and white balance parameter.
    2. partially initialize: only initialize work parameter of NN5199 and the ninth digital and the tenth digital of function set parameter(via. ISUD0, ISUD1,ISUD3,ISUD4,ISUD5),preset as interior values.

7. If use pure flat tube , must adjust horizontal size and pincushion distortion as following:
    1. Receive monoscope pattern; Adjust VR902 until overscan ratio (scanning size)to 92% to 96%
    2. Receive cross hatch pattern signal; Adjust VR901 until the pinchusion of the CRT two sides are most straight.

COLOUR PURITY AND CONVERGENCE ADJUSTMENT

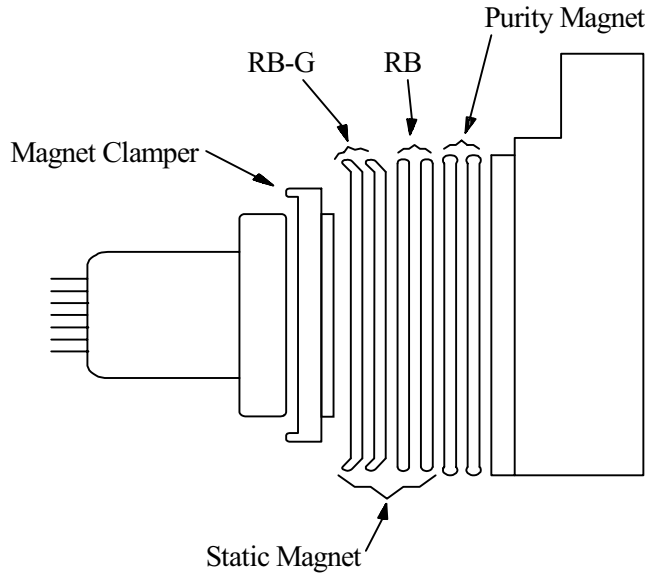
I COLOUR PURITY ADJUSTMENT (See Fig.1)

BEFORE ANY ADJUSTMENTS DESCRIBED BELOW ARE ATTEMPTED,V-HIGH, B+ VOLTAGE AND FOCUSING ADJUSTMENT MUST BE COMPLETED .

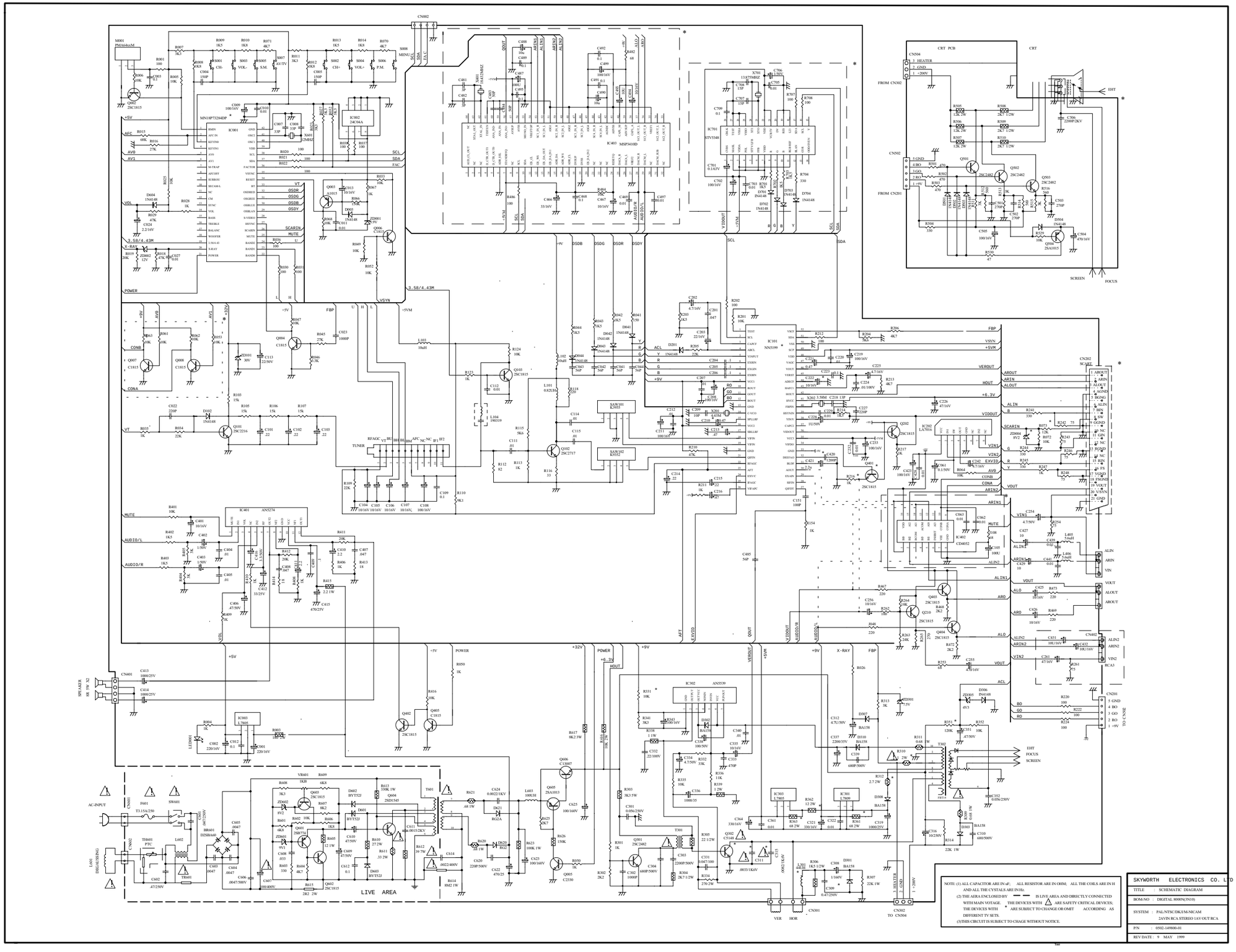
1. Place the TV receiver facing NORTH or SOUTH ,
2. Plug in TV receiver and turn it on .
3. Operate the TV receiver over 30 minutes.
1. Fully degauss the TV receiver by using and external degaussing coil
2. Receive a crosshatch pattern and adjust the static convergence control roughly.
3. Loosen the clamp screw of the deflection yoke and pull the deflection yoke towards you.
4. Enter into ADJUST MENU .set the values of C-R,C-G,C-B to “00”.
5. Adjust the purity magnets so that green field is obtained at the center of the screen.
6. Slowly push the deflection yoke toward bell of CRT and set it where a uniform green field is obtained.
7. Tighten the clamp screw of the deflection yoke.

II. CONVERGENCE ADJUSTMENT (See Fig.1)

1. Receive a dotted pattern.
2. Unfix the convergence magnet clamped and align red with blue dots at the center of the screen by rotating.(R,B)static convergence magnets.
3. Align Red/Blue with green dots at the center of the screen by rotating (RB-G) static convergence magnet.
4. Fix the convergence magnets by turning the clamped.
5. Remove the DY wedges and slightly tilt the deflection yoke horizontally and vertically to obtain the good overall convergence.
6. Fix the deflection yoke by wedges.
7. If purity error is found, follow “PURITY ADJUSTMENT” instructions.



(FIG.1)


CRT PCB
CRT
FROM CN302
FROM CN201
SCREEN
FOCUS
EHT
LIVE AREA
AC-INPUT
SPEAKER
8R 5W X2
TO CN502
CN302
TO CN504
VER
HOR
CN301
SKYWORTH ELECTRONICS CO. LTD
TITLE : SCHEMATIC DIAGRAM
BOM-NO : DIGITAL 8000(N10)
SYSTEM : PAL/NTSC/DK&M-NICAM
2AVIN RCA STEREO 1AV OUT RCA
P/N 0502-149800-01
REV DATE : 9 MAY 1999